

James Charters December 2 email

Ron,

Many of the recommendations assume that Western has resources that can be used for ancillary markets and are used for the BA in that manner. Two things are not in evidence:

1. When Western markets the federal hydropower it markets the capacity and energy based on the river flows. When that capacity is marketed to its total availability the remaining resource for use is based on the customer not using all of its allocated capacity. Recall that at Hoover the customer provides a 2 second requirements signal that is consolidated. It is very hard to market a resource that might be there or might not depending on the call of the Customer. In order to perform the functions outlined in the recommendations Western must reserve some of that federal hydropower. In the past this was done at a level far beyond the ability of the generators to produce both that for Preference Customers in the marketing plan and for Western based on the projected water year. Recall that the estimated flow of the Colorado has NEVER matched that projection unless in flood stage. The amounts in the Colorado River Compact have been known to be a pipe dream since the signature in 1920s.
2. FERC carefully separated the resources from the transmission but persists in assuming that the utilities haven't done this. Western did. The ancillaries assumed in Western's transmission OATT are those purchased by Western for the OATT Customer who desires them. The possible exception to this process is the Preference Power delivery as part of the marketing of the wholesale Preference power. That is part of the marketed capacity to those Customers.

Recall that generators put out capacity, energy and reactive power (VARs), which subtracts from the capacity and energy ability. Recall as well that VARs don't travel well.

Shortening schedule time is possible if and only if the ramp rates of the resources within a BA are sufficiently quick to allow this to occur. In DSW these ramp rates are dependent on Hoover and the water flow restrictions. While the theoretical ramp rate may be very quick we will probably find that when Hoover is operating on a three unit basis that rate is much slower than if all 17 units are running. Recall that the Hoover consolidation was done to enable \$20M more revenue because of the unit consolidation and water used. I refer you to the Hoover Consolidation study done by Blaine Hammon of USBR. We often take things for granted as time passes. Recall as well that other than CTs, hydro is the quickest ramp rate. That said assuming that consolidated resources across a series of BAs is quick is to make use of the AGC that all generators in WECC are supposed to have, and most do, to retain frequency stability. If Ancillaries are provided to firm generation then that should be arranged as a contracted resource; from Western if you take it away from the preference Customers use of their purchased capacity and energy.

I do not disagree with placing the EPTC in NREL with the proviso that NREL leave their politics at the door. NREL mission is to promote renewable energy. Often they have made presentations which bias (?) the laws of physics and the grid operations to fit their mission. Just because NREL has PhDs doesn't mean that the systems that have taken very smart people many years to develop are wrong. I would feel better if the EPTC were transferred to NERC since theirs is a reliability mission.

It would appear that bullets one and six are very closely related. Does WACM have any real ancillaries to sell?

When DSW marketed the transmission with path and contracts we were able to make use of the systems when those contractors didn't use them on a non-firm basis. The assumption of most is that the transmission was hoarded. That was not and is not true. With Conditional Firm and always available Non-Firm the interconnecting generators never asked for those products. If one looks at CAISO they never have firm but the users of the system (and particularly their finance entities) have learned to live with that. Recall that NITS was designed for loads in the BA. Through transport is much harder to operate because of inadvertent flows. If one does a study of using this type of system one should compare the schedules to actuals to see the delta. Mostly this is necessary because the actual flows are what should match the NITS as a schedule. What is the delta between schedule, actual, a NITS projection based on requests from interconnected loads and resources?

When we did the last losses study we bounded a closed systems for the WALC BA. We took the generation inside the boundary, the loads inside boundary, and the in and out flows. What we found was that the 4% losses number was not even close. Statistically the 3% number was at the 2 sigma. Our handy power marketing had been selling the 1%. Now I do not object to the sale of the excess energy but I did object to it being called losses. Western would do well to perform another of these calculations since they are to be done yearly and I did the last one.

If one does the system in NITS what is the relationship between the actual flows and the Infrastructure investment study (IIS). Those nasty electrons have a habit of going wherever they please. If you remove a line from the flow and the other lines carry more does that mean that the removed line was unimportant? Recall that disposal of government assets must be done through GSA. We tried to sell a line to APS once and couldn't get it done. The same is true for lands. Check it out.

If an infrastructure investment study shows that a 500 kV line overbuilt is carrying the actual freight, does that mean we should remove the 115 kV line that has an assigned value and can actually be marketed? Is this a MOD 29 concession to the over builder and Western should just tear down its system and refer its Customers to APS? If flow based is used what would the relationship be for Western on the MPP? When a joint ownership contract is let and capacity is assigned using the 1222 process it must also be placed in the contract that the flow also be divided. If an SRP or APS is marketing and Western is not does this mean that Western can coattail the others? Probably not and the flow base will require contract changes for the MPP and the other participation projects. This needs consideration.

Hope these thoughts have helped to expand your ideas. If I can be of assistance you know where to find me.

Hope you had a great holiday and will have a great future holiday. DO NOT OVER WORK. It leads to the inability to let go later in life and to poor health.

Jim

James Charters December 3 email

Ron,

Recall that back in the USBR days they designed the South of Phoenix 115 kV systems (except the Lib – COL designed by Tony with the sling shot turning structures) using North Dakota Specifications. All

planners (including APS and SRP) in AZ know this. Thus at AZ high temps the rating is zero. Now we all know that that is not really what happens. As our neighbors overbuilt Western's systems in the planning they acknowledged the 100 MW ratings that Western had and that with the laws of physics they would be carrying some or all of the freight in a flow based system. That grandfathering is critical to the viability of Western's transmission system. In a flow based analysis or even a NITS there will be significant flow on that overlying system due to its lower impedance and higher voltage. Western never objected to or demanded capacity in the overlying system because it was recognized as to its capacity in the planning processes. Actual flows cannot match the grandfathered capacity and any attempt to market or obtain revenue in that manner in a close coupled system of lines among multiple companies will cause failure of Western to assure any return on investment for its existing system. Even flow scheduled over Western's system will not entirely flow on Western's system (Recall that it splits by impedance but not all goes to the lower impedance). Have care. It has taken a long time but soon APS will screw Western if this is allowed to continue.

Jim

James Charters December 6, email

Ron,

In everything we did at Western we always considered two things in a project: rates and return on investment. Every submission to OMB for entry in the budget always frustrated us because they only looked at the cost and not the return on investment. As you recall we always referred to the Treasury as the "black hole" because we were never allowed to use our revenue stream for infrastructure improvements and capital maintenance. What we were seeing is that the congress looks only at the outflow and never the inflow from a project. We were always told that Feds don't make money; however, western does make money for the treasury. In decisions about the facilities and how to operate it is important to continue to make a return on investment "interest" for the treasury. This shouldn't be a rip off of the Customers but should return the ATRR which includes the interest on the borrowing from treasury. I suspect if the federal systems looked more at being cost effective and the ROI that we would live in a different era. In any case Western must consider the ROI in their deliberations and assure that the systems process does not return less revenue.

Jim